CLAIMS

1. A medical balloon catheter comprising a balloon having a groove and/or a projection helically provided on the balloon relative to the longitudinal axis of the balloon.

2. The medical balloon catheter according to claim 1, wherein the groove and/or the projection are helically provided on at least one balloon taper relative to the longitudinal axis of the balloon.

3. The medical balloon catheter according to claim 2, wherein the groove and/or the projection helically provided on a balloon taper relative to the longitudinal axis of the balloon are continuously provided at an angle ranging from 15° to 180° when viewed from the distal end, the angle being defined by a center-line connecting the center and a starting point and another-line connecting the center and an ending point.

4. The medical balloon catheter according to claim 2 or 3, wherein the groove and/or the projection are helically provided on a distal balloon taper relative to the longitudinal axis of the balloon, said the groove and/or the projection being extending from the distal end to the proximal side.

5. The medical balloon catheter according to any one of claims 1 to 4, wherein a plurality of grooves and/or projections are helically provided on a balloon taper relative to the longitudinal axis of the balloon.

6. The medical balloon catheter according to any one of claims 1 to 5, wherein the number of the grooves and/or projections helically provided on a balloon taper relative to the longitudinal axis of the balloon is 2 to 5.

7. The medical balloon catheter according to any one of claims 1 to 6, wherein the width of the groove and/or the projection helically provided on a balloon taper relative to the longitudinal axis of the balloon varies in the direction of the longitudinal axis of the balloon.

8. The medical balloon catheter according to any one of claims 1 to 7, wherein the width of the groove and/or the projection helically provided on a balloon taper relative to the longitudinal axis of the balloon is 1 μm or more.

9. The medical balloon catheter according to any one of claims 1 to 8, wherein the width of the groove and/or the projection helically provided on a balloon taper relative to the longitudinal axis of the balloon is 10 μm to 1,000 μm.

10. The medical balloon catheter according to any one of claims 1 to 9, wherein the depth of the groove and/or the height of the projection helically provided on a balloon taper relative to the longitudinal axis of the balloon is 0.01 m or more.

11. The medical balloon catheter according to any one of claims 1 to 10, wherein the depth of the groove and/or the height of

the projection helically provided on a balloon taper relative to the longitudinal axis of the balloon is 0.1 mm or more to 3.0 mm or less.

12. The medical balloon catheter according to any one of claims 1 to 11, wherein the length of the groove and/or the projection helically provided on a balloon taper relative to the longitudinal axis of the balloon is 0.1 mm or more to 4.0 mm or less.

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13. A method for producing a balloon catheter including a balloon having a groove and/or a projection helically provided on a balloon taper relative to the longitudinal axis of the balloon, the method comprising forming the balloon with a mold.

14. A method for producing a balloon catheter including a balloon having a groove and/or a projection helically provided on a balloon taper relative to the longitudinal axis of the balloon, the method comprising applying thermal energy to a preliminary formed balloon to form a groove and/or a projection helically provided on the balloon relative to the longitudinal axis of the balloon.

15. A method for producing a balloon catheter including a balloon having a groove and/or a projection helically provided on a balloon taper relative to the longitudinal axis of the balloon, the method comprising irradiating a preliminally formed balloon with a laser to form a groove and/or a projection on a balloon taper helically provided relative to the longitudinal axis of the balloon.

16. The method for producing the balloon catheter according to any one of claims 13 to 15, wherein the groove and/or the projection to be helically provided on a balloon taper relative to the longitudinal axis of the balloon are formed on at least one balloon taper.

17. The method for producing the balloon catheter according to any one of claims 13 to 15, wherein the groove and/or the projection to be helically provided on a balloon taper relative to the longitudinal axis of the balloon are formed on a distal balloon taper, the groove and/or the projection extending from the distal end to the proximal side.